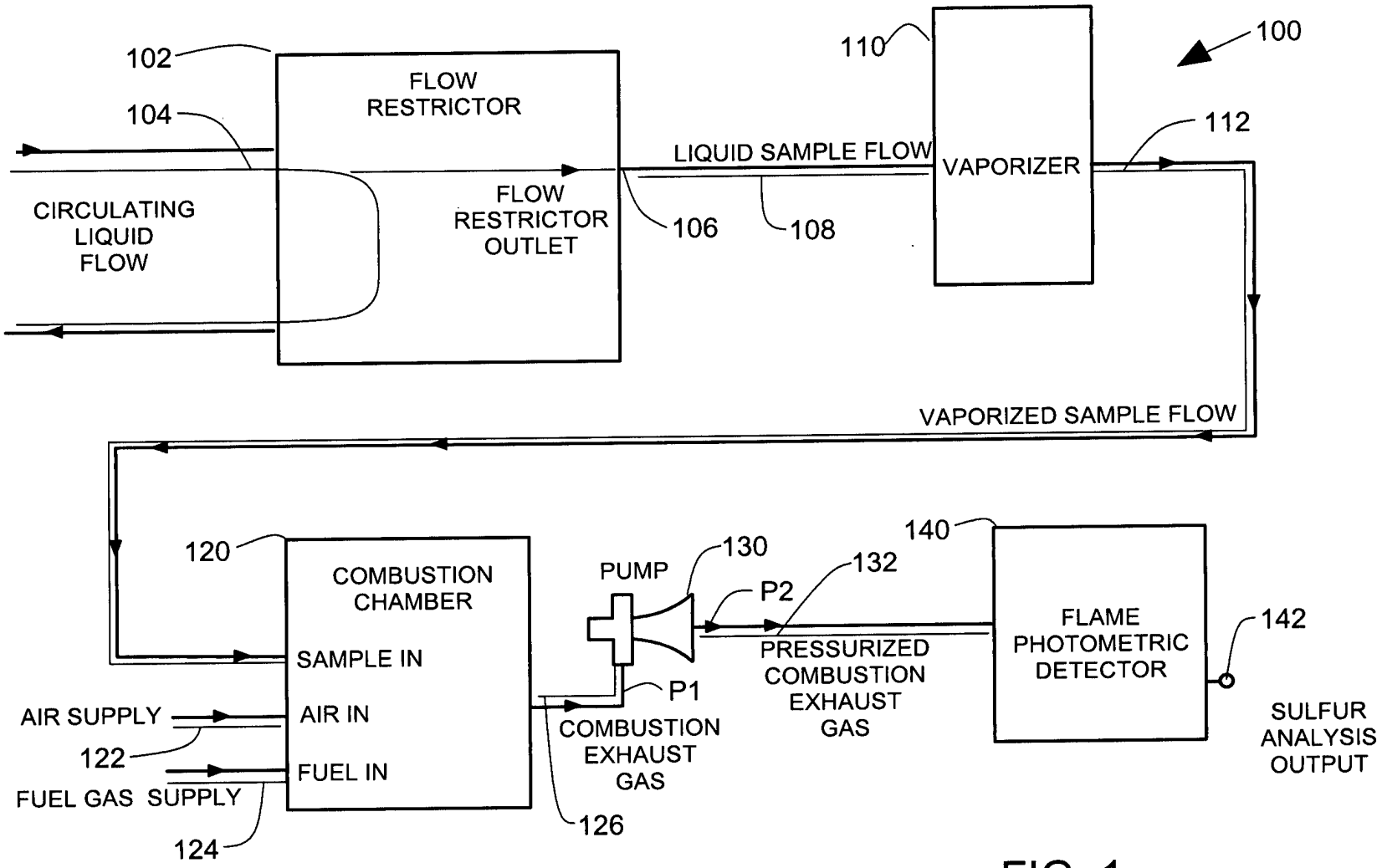
102
FLOW
RESTRICTOR
104
CIRCULATING
LIQUID
FLOW
FLOW
RESTRICTOR
OUTLET
106
108
110
VAPORIZER
100
112
LIQUID SAMPLE FLOW
VAPORIZED SAMPLE FLOW
120
COMBUSTION
CHAMBER
SAMPLE IN
AIR IN
FUEL IN
AIR SUPPLY
122
FUEL GAS SUPPLY
124
PUMP
130
P2
132
P1
COMBUSTION
EXHAUST
GAS
126
PRESSURIZED
COMBUSTION
EXHAUST
GAS
140
FLAME
PHOTOMETRIC
DETECTOR
142
SULFUR
ANALYSIS
OUTPUT

FIG. 1

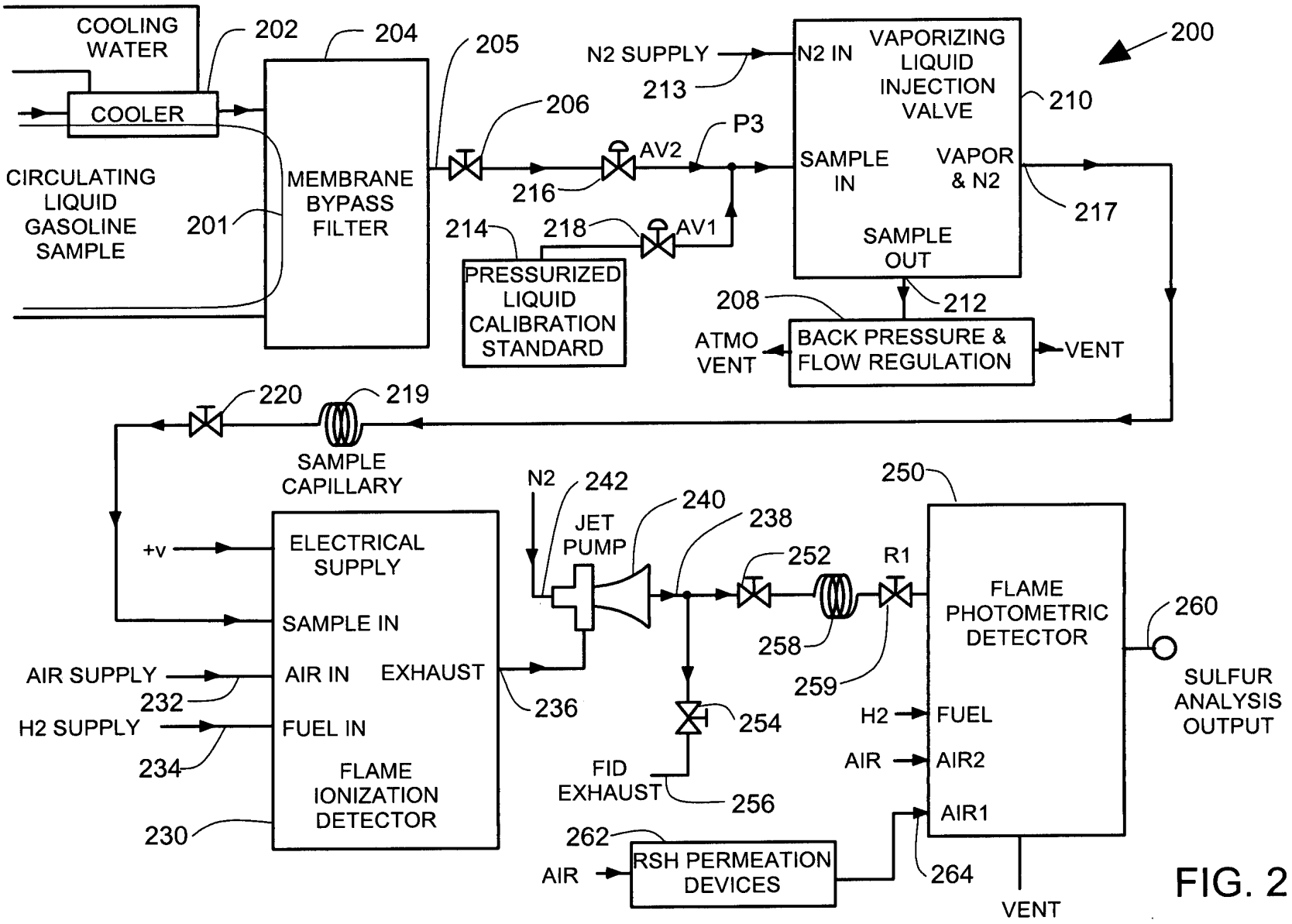
COOLING WATER
202
204
205
N2 SUPPLY
213
200
COOLER
206
VAPORIZING LIQUID INJECTION VALVE
210
P3
AV2
CIRCULATING LIQUID GASOLINE SAMPLE
201
MEMBRANE BYPASS FILTER
SAMPLE IN
VAPOR & N2
216
217
214
218
AV1
SAMPLE OUT
PRESSURIZED LIQUID CALIBRATION STANDARD
208
212
ATMO VENT
BACK PRESSURE & FLOW REGULATION
VENT
220
219
SAMPLE CAPILLARY
N2
242
240
238
250
JET PUMP
+v
ELECTRICAL SUPPLY
252
R1
FLAME PHOTOMETRIC DETECTOR
260
SAMPLE IN
258
259
SULFUR ANALYSIS OUTPUT
AIR SUPPLY
AIR IN
EXHAUST
232
236
254
H2 SUPPLY
FUEL IN
H2
FUEL
234
AIR
AIR2
FID EXHAUST
256
FLAME IONIZATION DETECTOR
AIR1
230
262
RSH PERMEATION DEVICES
AIR
264
VENT

FIG. 2

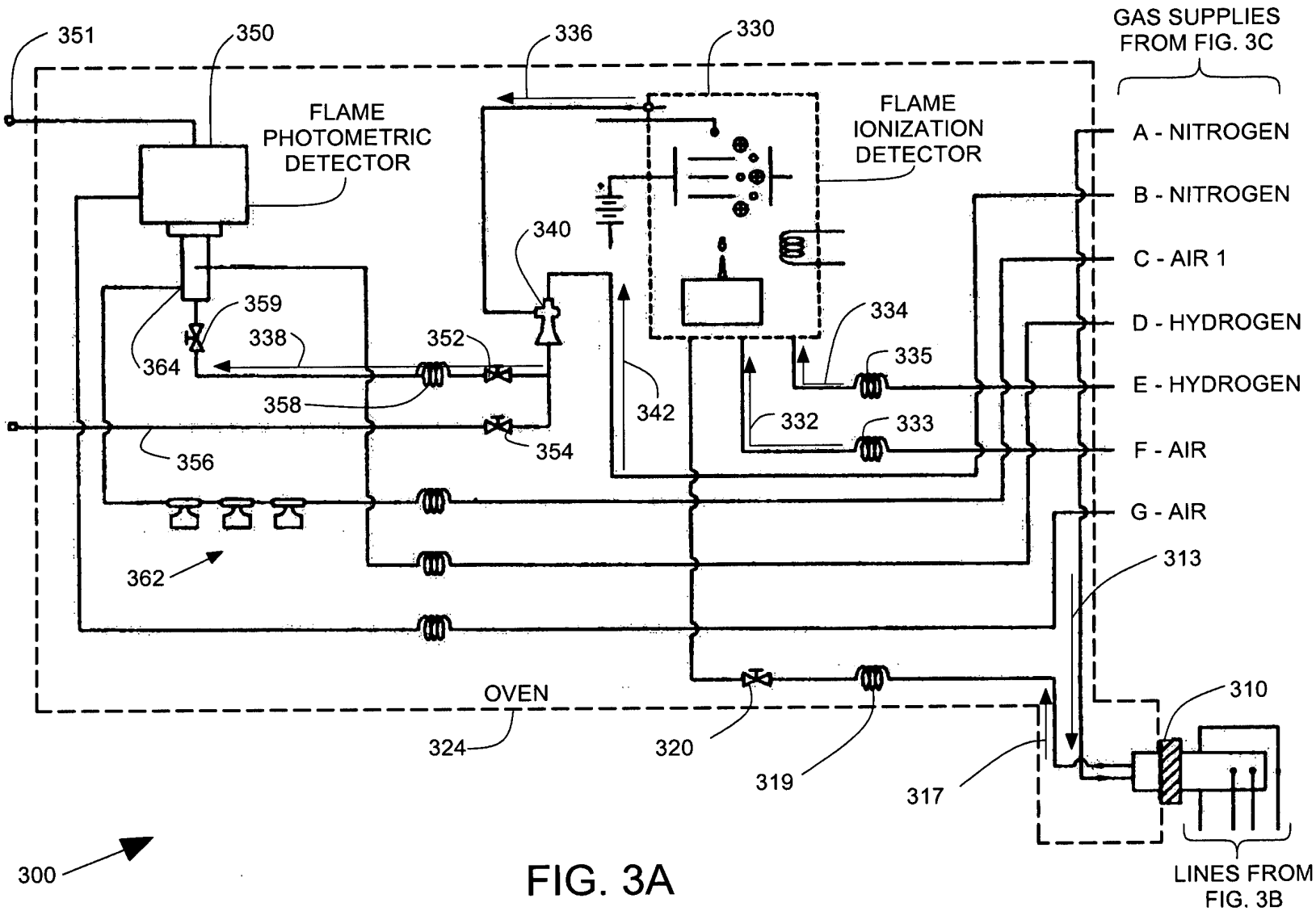
GAS SUPPLIES FROM FIG. 3C
A - NITROGEN
B - NITROGEN
C - AIR 1
D - HYDROGEN
E - HYDROGEN
F - AIR
G - AIR
FLAME PHOTOMETRIC DETECTOR
FLAME IONIZATION DETECTOR
OVEN
LINES FROM FIG. 3B
351
350
336
330
340
359
338
352
364
358
354
356
342
334
335
332
333
362
313
310
324
320
319
317
300

FIG. 3A

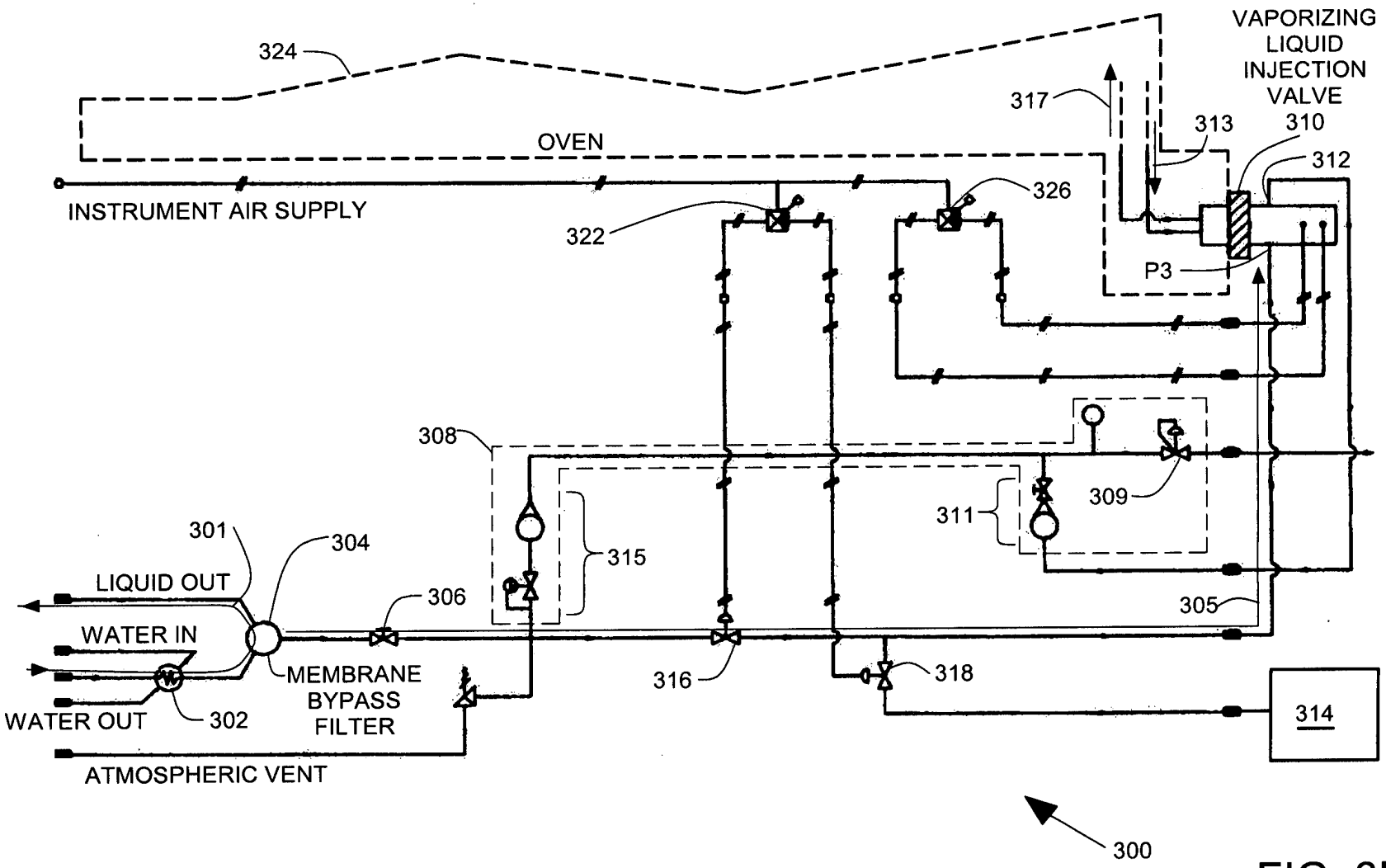
VAPORIZING
LIQUID
INJECTION
VALVE
324
317
313
310
312
OVEN
INSTRUMENT AIR SUPPLY
326
322
P3
308
309
311
315
301
304
LIQUID OUT
306
305
WATER IN
316
318
MEMBRANE
BYPASS
FILTER
WATER OUT
302
314
ATMOSPHERIC VENT
300

FIG. 3B

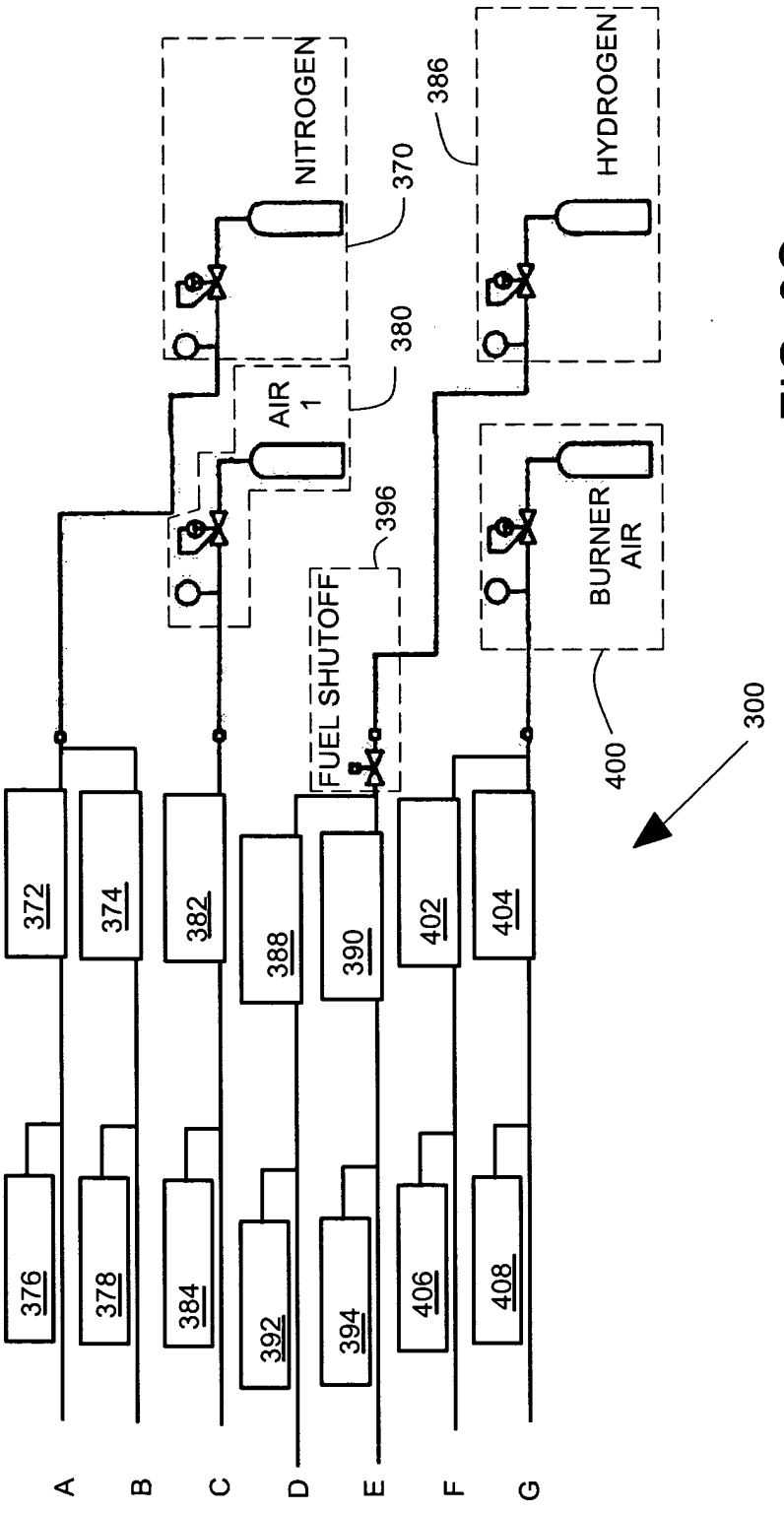
NITROGEN
370
386
HYDROGEN
380
AIR 1
396
FUEL SHUTOFF
BURNER AIR
400
300
372
374
382
388
390
402
404
376
378
384
392
394
406
408
A
B
C
D
E
F
G

FIG. 3C

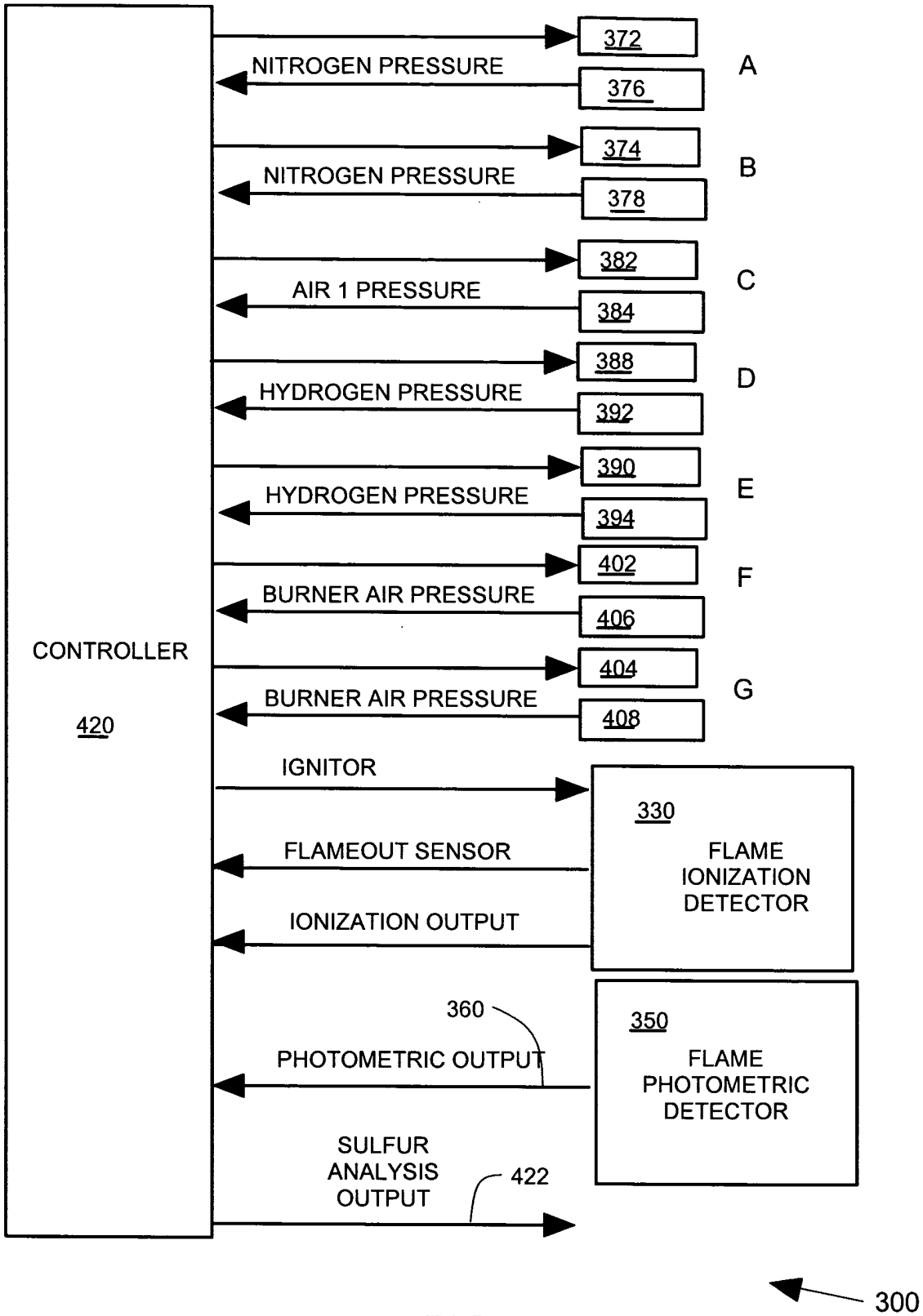
CONTROLLER
420
372
NITROGEN PRESSURE
376
A
374
NITROGEN PRESSURE
378
B
382
AIR 1 PRESSURE
384
C
388
HYDROGEN PRESSURE
392
D
390
HYDROGEN PRESSURE
394
E
402
BURNER AIR PRESSURE
406
F
404
BURNER AIR PRESSURE
408
G
IGNITOR
330
FLAME IONIZATION DETECTOR
FLAMEOUT SENSOR
IONIZATION OUTPUT
360
350
PHOTOMETRIC OUTPUT
FLAME PHOTOMETRIC DETECTOR
SULFUR ANALYSIS OUTPUT
422
300

FIG. 3D